CLAIMS

WHAT IS CLAIMED IS:

1. A system for the absorption of vibration in an automotive closure panel assembly, comprising:

(a) an intrusion device associated with an automotive exterior panel structure; and

(b) an expandable material for absorbing vibration disposed over at least a portion of said intrusion device and in contact with said intrusion device prior to expansion of said expandable material, and with a surface of said panel after expansion of said expandable material.

2. The system as claimed in claim 1, wherein said intrusion device has a first end and a second end fixedly attached to an inner portion of said automotive panel structure thereby defining a cavity.

3. The system as claimed in claim 1, wherein an external surface of said intrusion device is at least partially coated with said expandable material.

4. The system as claimed in claim 1, wherein said expandable material is a heat activated thermoplastic foamable material.

5. The system as claimed in claim 4, wherein said expandable material comprises an extruded pellet.

6. The system as claimed in claim 1, wherein said intrusion device comprises a door intrusion beam having an exposed surface.

7. The system as claimed in claim 6, wherein said exposed surface of said door intrusion beam is suitable for application of said expandable material.

8. The system as claimed in claim 1, wherein said intrusion device is comprised of a high strength polymeric material.

9. The system as claimed in claim 1, wherein said expandable material is a heat activated expandable polymer foam.

10. The system as claimed in claim 1, wherein said expandable material is an expandable ethylene based foam that is generally free of tack to the touch.

11. The system as claimed in claim 9, wherein said expandable material is an expandable ethylene based foam that can be activated at a temperature encountered in an automotive vehicle paint operation.

12. A vibration damping system for a door assembly of an automotive vehicle, comprising:

(a) an intrusion device suitable for fixed placement within an automotive vehicle having a first end and a second end mounted to the door assembly defining a cavity therein, said intrusion device further having exposed surface portions between said first end and said second end; and

(b) a plurality of nodes of an expandable vibration damping material in bonding contact over at least a portion of said exposed surface portions of said intrusion device.

13. The system as claimed in claim 12, wherein said expandable material is a polymer foam.

14. The system as claimed in claim 12, wherein said intrusion device is a intrusion device.

15. The system as claimed in claim 12, wherein said expandable material is a heat activated expandable polymer foam.

16. The system as claimed in claim 12, wherein said expandable material is an expandable polymer foam that is generally free of tack to the touch.

17. The system as claimed in claim 12, wherein said expandable material is an expandable ethylene-based foam that can be activated at a temperature encountered in an automotive vehicle paint operation.

18. The system as claimed in claim 12, wherein said nodes include a plurality of nodes of different sizes and shape.

19. The system as claimed in claim 16, wherein said expandable material is extruded into pellets.

20. The system as claimed in claim 16, wherein said expandable material is encapsulated.

21. A system for reducing vibration in an automotive door assembly, comprising:

(a) a intrusion device fixed mounted within an automotive door assembly; and

(b) an expandable material for reducing vibration disposed over at least a portion of said intrusion device and in contact with said intrusion device prior to expansion of said expandable material.

22. The system as claimed in claim 21, wherein said intrusion device defines a cavity of an automotive door assembly.

23. The system as claimed in claim 21, wherein said intrusion device is at least partially coated with said expandable material.

24. The system as claimed in claim 21, wherein said expandable material is a heat activated thermoplastic foamable material.

25. The system as claimed in claim 24, wherein said expandable material comprises an extruded pellet.

26. The system as claimed in claim 21, wherein said intrusion device includes an exposed surface.

27. The system as claimed in claim 26, wherein said exposed surface of said intrusion device is suitable for application of said expandable material.

28. The system as claimed in claim 21, wherein said intrusion device is an automotive intrusion beam.

29. The system as claimed in claim 21, wherein said expandable material is a heat activated expandable polymer foam.

30. The system as claimed in claim 21, wherein said expandable material is an expandable ethylene based foam that is generally free of tack to the touch.

31. The system as claimed in claim 29, wherein said expandable material is an expandable ethylene based foam that can be activated at a temperature encountered in an automotive vehicle paint operation.